

## PATENT COOPERATION TREATY

From the

INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

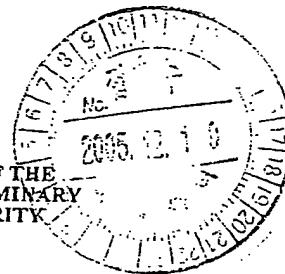
LEE, Won-Hee

8th Fl.Sung-ji Heights, II 642-16 Yoksam-dong Kangnam-ku  
Seoul 135-080 Republic of Korea

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY  
EXAMINING AUTHORITY

(PCT Rule 66)

Date of mailing  
(day/month/year) 16 DECEMBER 2005 (16.12.2005)

Applicant's or agent's file reference 4FPO-11-04		REPLY DUE within 1 months from the above date of mailing
International application No. <b>PCT/KR2004/003435</b>	International filing date (day/month/year) <b>24 DECEMBER 2004 (24.12.2004)</b>	Priority date(day/month/year) <b>27 DECEMBER 2003 (27.12.2003)</b>
International Patent Classification (IPC) or both national classification and IPC <b>IPC7 C07D 307/68</b>		
Applicant <b>KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY et al</b>		

1.  The written opinion established by the International Searching Authority :  
 is considered to be a written opinion of the International Preliminary Examining Authority.  
 is not

2. This \_\_\_\_\_ (first, etc.) opinion contains indications relating to the following items:

Box No. I Basis of the opinion  
 Box No. II Priority  
 Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  
 Box No. IV Lack of unity of invention  
 Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  
 Box No. VI Certain documents cited  
 Box No. VII Certain defects in the international application  
 Box No. VIII Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

When ? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(e).

How ? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3.

For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis.

For an informal communication with the examiner, see Rule 66.6.

For an additional opportunity to submit amendments, see Rule 66.4.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary report on patentability (Chapter II of the PCT) must be established according to Rule 69.2 is: **17 APRIL 2006 (17.04.2006)**

Name and mailing address of the IPEA/KR



Korean Intellectual Property Office  
920 Dunsan-dong, Seo-gu, Daejeon 302-701,  
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

JIM, Hea Joon

Telephone No. 82-42-481-5600

WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

International application No.  
PCT/KR2004/003435

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which was filed, unless otherwise indicated under this item.
  - This opinion is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this opinion has been established on the basis of (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."):
  - the international application as originally filed
  - the description:  
pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_, as originally filed/furnished  
pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - the claims:  
pages \_\_\_\_\_, as originally filed/furnished  
pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - the drawings:  
pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_, as originally filed/furnished  
pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3.  The amendments have resulted in the cancellation of:
  - the description, pages \_\_\_\_\_
  - the claims, Nos. \_\_\_\_\_
  - the drawings,sheet/fig \_\_\_\_\_
  - the sequence listing (specify): \_\_\_\_\_
  - any table(s) related to the sequence listing (specify): \_\_\_\_\_
4.  This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages \_\_\_\_\_
  - the claims, Nos. \_\_\_\_\_
  - the drawings,sheet/fig \_\_\_\_\_
  - the sequence listing (specify): \_\_\_\_\_
  - any table(s) related to the sequence listing (specify): \_\_\_\_\_

WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

International application No.  
PCT/KR2004/003435

**Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	1-10
	Claims	
Inventive step (IS)	Claims	1-10
	Claims	
Industrial applicability (IA)	Claims	1-10
	Claims	

**2. Citations and explanations :**

Reference is made to the following documents:

- D1 = US 5627193 A (06. 05. 1997)
- D2 = US 6630506 B1 (07. 10. 2003)
- D3 = WO 03-101450 A1 (11. 12. 2003)
- D4 = WO 99-33460 (08. 07. 1999)

The present invention relates to furancarbonylguanidine derivatives which can be used as a NHE-1 inhibitor, a preparation method thereof and a pharmaceutical composition comprising the same.

D1 discloses quinoline-4-carbonylguanidine derivative and a preparation method thereof and a NHE inhibitor containing the same. D2 discloses acyl guanidines which are used as NHE inhibitors. D3 discloses N-((3-oxo 2,3-dihydro-1H-isoindol-1-yl)acetyl)guanidine derivatives as NHE-1 inhibitors for the treatment of infarction and angina pectoris. D4 discloses acyl guanidine sodium/proton exchange inhibitors and method.

**1. Novelty**

None of the prior art disclose the compound of formula(I) claimed in the present invention and their property. Therefore, the present invention seems to be novel(PCT Article 33(2)).

**2. Inventive Step**

Although D1-D5 disclose the compounds showing a similar pharmaceutical activity as the compounds of the present invention, neither structural variation nor combination of different structural features of compounds disclosed therein lead to the structural properties as those described in the present invention. Thus the present invention is regarded as being inventive according to PCT Article 33(3).

**3. Industrial Applicability**

The present invention meets the criteria set out in PCT Article 33(4).